

# REMOVAL OF WEATHER BUREAU OFFICE IN NEW YORK CITY.

By A. J. HENRY, Chief of Division.

The Weather Bureau office in New York City was moved on October 15, 1898, from the Manhattan Building, No. 66 Broadway, to the American Surety Building, No. 100 Broadway, i. e., about two blocks farther north.

The office quarters in the Manhattan Building consisted of four circular rooms, one immediately above the other, in the tower that rises to an altitude of about 88 feet above the main roof and 355 feet above the curb stone on Broadway. Communication between the four rooms was by means of a central spiral staircase. The barometer was in the first or lower room. Owing to the presence of the tower and the general configuration of the roof it was necessary to give the anemometer, wind vane, and thermometers a much greater elevation than would be afforded by the ordinary supports. The thermometer shelter support consisted of a skeleton framework of iron, high enough to give the thermometers an elevation of 54 feet above the main roof. Access to the shelter was secured by means of a spiral staircase, the iron newel of which extended upward about 34 feet above the top of the framework as a support for the wind vane and anemometer. The last-named instruments were thus placed at an elevation of 326 feet above the curb, but still some distance below the top of the main portion of the tower. This station was thus occupied from March 15, 1895, to October 15, 1898.

The office quarters secured in the American Surety Building consist of five rooms *en suite* on the twentieth floor, the next but one to the top of the building. The roof of the building on which the instruments are exposed is almost flat and there are no projecting towers or chimneys on the building itself or surrounding structures to obstruct the free sweep of the wind. The barometer is at the same elevation as in the Manhattan building.

The heights of the instruments above the Pine Street curb and the roof are now as follows:

Instruments.	Above curb.	Above roof.
	<i>Feet.</i>	<i>Feet.</i>
Barometer.....	276	
Thermometers.....	313	11.0
Anemometer cups.....	345	43.5
Wind vane.....	322	19.8
Rain gauge.....	305	3.2

The official in charge of the station, Mr. E. H. Emery was directed by the Instrument Division to make a number of comparative readings of temperature and wind velocity at the two localities before the final transfer. The readings were made at the same moment, except that the morning temperature readings in the new office were sometimes made a few minutes late owing to an unavoidable delay in reaching the shelter.

This fact may partially account for the wide discrepancies between the 8 a. m. readings of the dry thermometer, as shown in the table below.

Curiously enough, the thermometers in the new shelter, although 15 feet higher than in the old, but only 11 feet above the roof as compared with 54 at the old office, almost invariably register a higher temperature.<sup>1</sup> The readings of

<sup>1</sup> It would be quite erroneous to assume that an increase in the elevation of the thermometer necessarily means a diminution of temperature. The early morning hours almost invariably show an increase of temperature with ascent above the ground, and in a crowded city like New York, the ascent above the general level of the roofs of houses is almost equivalent to the ascent above ground in an open field. In the present case we have not merely, in the new position, an ascent of the thermometer above sea level, but a still greater ascent of the roof, so that the proximity of the thermometer to the roof sometimes counterbalances its ascent above the ground. Moreover, the vertical walls of the building being heated by the sun, produce an effect in the daytime

the different instruments, excluding from consideration those of the dry thermometer in the morning,<sup>2</sup> are consistent, and represent, it is believed, actual differences of temperature between the two exposures. The thermometer shelter at the Manhattan Building seems, for some unknown reason, to have given unduly low temperatures. See Annual Report, 1896-97, page 74.

The effect of steam from an exhaust pipe 66 feet distant from the thermometers, is plainly shown by the readings of the maximum and dry thermometers on the Manhattan Building at 8 p. m. of the 8th. This difficulty is not obviated in the new exposure, since there are two exhaust pipes on the roof, which, however, are in such position as to affect the thermometers with southeasterly winds only.

The wind velocity on the Manhattan Building was too low with westerly winds, owing to the shielding effect of the tower. The present exposure of the anemometer is excellent in all respects.

## Comparative thermometer readings, New York City.

8 A. M.

Date.	Maximum.			Minimum.			Dry.		
	Old station.	New station.	Difference, N. - O.	Old station.	New station.	Difference, N. - O.	Old station.	New station.	Difference, N. - O.
1898.									
October 7....	60.0	61.8	+1.8	52.6	54.0	+1.4	55.0	59.0	+4.0
October 8....	62.0	63.9	+1.9	58.0	58.7	+0.7	62.0	61.8	-0.2
October 9....	63.7	.....	.....	52.4	.....	.....	55.0	.....	.....
October 10....	63.0	64.7	+1.7	48.8	52.1	+3.3	50.0	52.1	+2.1
October 11....	63.3	64.0	+0.7	58.2	57.1	-1.1	63.3	64.0	+0.7
October 12....	68.0	68.2	+0.2	59.5	59.7	+0.2	61.0	63.1	+2.1
October 13....	58.0	59.2	+1.2	46.8	.....	.....	49.0	51.1	+2.1
October 14....	56.2	59.5	+3.3	53.0	54.0	+1.0	56.2	59.5	+3.3
October 15....	58.0	59.1	+1.1	44.0	45.0	+1.0	46.5	49.0	+2.5
Mean.....	.....	.....	+1.5	.....	.....	+0.9	.....	.....	+2.1

8 P. M.

1898.									
October 7....	62.8	64.0	+1.2	55.0	.....	.....	59.5	59.9	+0.4
October 8....	69.7*	64.8	-4.9†	62.0	62.3	+0.3	63.7‡	61.0	-2.7†
October 9....	68.8	69.2	+0.4	55.0	54.1	-0.9	63.0	64.7	+1.7
October 10....	60.1	62.0	+1.9	50.0	52.1	+2.1	58.2	58.0	-0.2
October 11....	68.7	69.8	+1.1	63.3	64.0	+0.7	66.5	66.3	-0.2
October 12....	66.9	68.0	+1.1	58.0	58.6	+0.6	58.0	58.6	+0.6
October 13....	60.0	61.8	+1.8	49.0	51.1	+2.1	54.0	55.5	+1.5
October 14....	60.9	62.9	+2.0	56.2	58.2	+2.0	58.0	58.6	+0.6
October 15....	56.6	.....	.....	46.5	.....	.....	49.7	51.0	+1.3
Mean.....	.....	.....	+1.4	.....	.....	+1.0	.....	.....	+0.7

\* Too high; affected by steam from exhaust pipe 66 feet distant. † Not included in the mean. ‡ Probably also affected by steam.

## Comparative anemometer readings, New York City.

Date.	Hourly wind movement (miles per hour.)											
	7 a. m. to 8 a. m.			1 p. m. to 2 p. m.			7 p. m. to 8 p. m.			Total 24 hours.		
	Old.	New.	Difference.	Old.	New.	Difference.	Old.	New.	Difference.	Old.	New.	Difference.
1898.												
October 8....	4	3	-1	5	4	-1	8	16	+8	154	194	+40
October 9....	7	12	+5	10	14	+4	10	9	-1	177	257	+80
October 10....	2	8	+6	13	11	-2	14	14	0	286	263	-23
October 11....	22	21	-1	24	22	-2	25	25	0	494	469	-25
October 12....	10	15	+5	16	34	+18	9	18	+9	290	488	+198
October 13....	5	6	+1	7	4	-3	10	8	-2	177	181	+4
October 14....	13	13	0	28	32	+4	21	25	+4	394	452	+58
October 15....	16	28	+12	20	35	+15	20	32	+12	362	629	+267
Mean.....	.....	.....	2.6	.....	.....	4.1	.....	.....	3.7	.....	.....	2.5

that sometimes overshadows all other influences. The differences between the old and new stations, as shown in Mr. Henry's tables, representing only one week in October, throw no clear light on the relations that may exist at other times of the year; they constitute merely one point in the annual curve that would be given by further observations.—ED.

<sup>2</sup> The board on public works of the city of New York has kindly permitted the installation of a thermometer shelter in Battery Park, a half mile south of the office, and arrangements will soon be completed for comparing temperatures near the ground in this park with those on the roof of the new office.—ED.